United States Court of Appeals

for the

District of Columbia Circuit

TRANSCRIPT OF RECORD

BRIEF AND APPENDIX FOR APPELLANT

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IN THE

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA

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No. 7884

SOCIETE ANONYME DES MANUFACTURES I
DE GLACES ET PRODUITS CHIMIQUES DE SAIN
GOBAIN, CHAUNY & CIREY, *Appellant*

v.

CONWAY P. COE, COMMISSIONER OF PATENTS,
Appellee

VERNON M. DORSEY
Attorney and Counsel for Appellan

PRESS OF BYRON S. ADAMS, WASHINGTON, D. C

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IN THE

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No. 7884

SOCIETE ANONYME DES MANUFACTURES DE GLACES ET PRODUITS CHIMIQUES DE SAINT-GOBAIN, CHAUNY & CIREY, *Appellant*

v.

CONWAY P. COE, COMMISSIONER OF PATENTS, *Appellee*

BRIEF FOR APPELLANT.

JURISDICTIONAL STATEMENT.

The appellant filed its bill in the District Court under R. S. 4915 (35 U. S. C., Section 63) against the appellee Conway P. Coe, as Commissioner of Patents, to obtain a decree that the appellant was entitled, as the assignee of Bernard Long, to have a patent issued to it on the Long application, Serial No. 18,092, filed April 25, 1935 (Appellant's App. 2).

STATEMENT OF CASE.

The Court below (Justice Bailey) after hearing the witness for the appellant held that the claims on appeal before him were unpatentable and dismissed the bill (Appellant's App. 18-19).

Appellant thereupon appealed to this Court and assigned error (Appellant's App. 20).

STATEMENT OF POINTS.

Appellant here now relies upon the fourth point of such statement of error. This reads as follows:

> "4. The Court erred in holding the Long claims unpatentable over the prior art and particularly over the Wells et al patent No. 1,454,200."

SUMMARY OF ARGUMENT.

1. Appellant's invention relates to a method of strengthening hollow glass elements inserted in a concrete structure against the lateral strains set up in that structure by settlement, expansion, etc.

2. Appellant claims his improved method as comprising the tempering of the inside or concave surfaces of such an element whereby it is, according to his disclosure, the better able to resist the strains.

3. The Wells patent held by the Court below to anticipate the claims is directed to spectacle blank and teaches that the convex and exposed surface when in use should be tempered so as to give it greater strength from blows to which it might be subjected on such surface.

4. Long in tempering his concave inner surface to a greater degree than the convex surface (as opposed to the opposite procedure in Wells) made an invention and that Judge Bailey was in error in holding (Findings of Facts Appellants App. 18) that:

> "9. In view of the Wells and Tillyer patent it was not invention to harden a glass element of the form claimed by directing a current of air against the concave side thereof nor was it invention to harden a glass element of the form claimed by directing a current of air against the convex surface thereof and a current of greater intensity against the concave surface thereof."

5. Judge Bailey also referred to the Hyatt patents as showing certain details as to form of unhardened elements but we contend for patentability on the change made over Tillyer, which is the only reference showing a hardened element.

ARGUMENT.

While the Long application is entitled "Light-Transmitting Concrete Structure" the invention covered by the claims is a method of so finishing glass elements to be inserted in the concrete structure for the purpose of illumination, etc., as will prevent cracking and disintegration of such glass elements under the compression strains exerted "by adjacent portions of the concrete structure" (Appellant's App. 28).

As shown in the drawing forming part of the Long application (Appellant's App. 37) the glass elements have a cup (Fig. 1) or a saucer (Fig. 2) shape; that is to say, they have a convex outer surface and a concave inner surface. The specification states (p. 27) that these forms are well known and are adopted because, as known, they afford the maximum resistance to the mechanical forces exerted upon them by the adjacent parts of the structure; that is to say, by the concrete body in which they are embedded.

The specification further states that in spite of this shaping of the elements they frequently crack due to pressure, shock and rapid fluctuations of temperature. Long proposes to prevent this cracking by "hardening" the glass element in a specified manner. "Hardening" as here used is the result of the sudden chilling of the surface of the element while the element is in a highly heated condition (Phillips, Appellant's App. 9). This sudden cooling, after the glass is finally returned to room temperature, leaves the surface layer of the element in compression while tension exists in the interior of the element. This treatment is termed "hardening", according to Phillips, because as a secondary result it produces a surface which is resistant to scratching and is hard in the sense that a tempered knife blade is hard.

Uniform tempering, that is to say, the similar tempering of the interior concave surface and of the exterior convex surface will not in itself add material strength or resistance to the strains to which the element is subjected because under those conditions the strains will not be applied in such manner as to oppose the strains resulting from the place of use.

Long accordingly applies a different rate of cooling (and thereby obtains a different temper) to the convex and concave surfaces of the element, the higher rate of cooling, and therefore the higher temper being applied to the interior concave surface and it is to this feature that the claims are directed.

That an element having the described temper has the advantages stated and is better able to resist the strains to which it is subjected when in place constituted Long's invention. Such an element was novel in the art and there was nothing in the art to teach the advantages flowing from the described tempering, and appellant, as assignee of Long, is therefore entitled to a claim protecting in some way the invention made by Long.

Claim 5 reads as follows (Appellant's App. 3):

> "A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the concave surfaces being more rapidly cooled than the convex surface."

Each of the other claims (6 and 7) embodies and contains the limitation found in claim 5 above quoted as to the differential cooling, the claims differing between themselves as to limitations on other points not necessary to be here discussed. Indeed, all the claims are believed to be more limited than required by the art.

It should be noted that the differential cooling with the concave surface the more rapidly cooled is not what is normally obtained in cooling a cup-shaped element; for unless special means are provided to produce the differential and excess cooling on the interior surface such surface is cooled more slowly than the convex outer surface (Phillips, Appellant's App. 11).

Therefore, to produce this more rapid cooling of the interior surface Long discloses in Figures 3 and 4 the direction of strong blasts of cool air into the interior of the hollow article. In Figure 3 the exterior surface is allowed to chill without air blasts directed thereon; while in Figure 4 a blast of less intensity than the internal blast is directed on the convex surface.

The single reference relied on is Wells and Tillyer, No. 1,454,200 (Appellant's App. 37) which shows a tempered eye glass or lens blank. These blanks are cup-shaped or saucer-shaped and Wells' idea as expressed in his patent (page 1, lines 20 *et seq.*) is to form a lens goggle "the convex surface of which can withstand a comparatively heavy blow with the assurance of the fact that the lens will not be shattered or broken over (by) the contact of the blow" and will *thus protect the eyes of the wearer.* This idea of eye protection from blows is further stressed in lines 41 and 42 of page 1. For this purpose Wells describes the sudden cooling of the convex surface of the lens blank and the slow cooling of the concave surface.

The paragraph commencing on line 27 of the Wells patent is somewhat obscure apparently from the dropping of a word or two. Completed it would be as follows:

> "A further object of our invention is the process of forming a hardened lens which consists in heating the lens blank to produce a convex surface and then suddenly cooling this convex surface causing the same to contract in the cooling *and the* cooling of the concave surface slowly which will tend to exert a pull on the hardened convex surface producing a compression in the convex surface and a tension in the concave surface." (Italic words added.)

The whole substance of the Wells patent is summed up in the paragraph commencing line 34, page 2, reading as follows:

> "From the above it will be apparent that after a lens has been put thru the above process, the convex surface of the lens will be in a sufficiently heated condition to withstand comparatively severe blows on the surface of the lens without the lens being shattered or broken over the contact of the blow."

It is pointed out that the Wells patent teaches the over-temper of the *convex* surface of a cup-shaped element. The Long application teaches the over-tempering of the *concave* surface of a cup-shaped element.

It is urged that the difference above named; namely, the hardening of a concave surface, involved invention over Wells in that there is nothing in the Wells patent suggesting that any useful effect would be produced by over-tempering the concave surface. Wells had in view only the strengthening of his glass against blows delivered on the anterior-convex "surface" thereof such as would be normally expected to happen to the ordinary convex eye glass lens.

Wells, et al., did teach that by over-tempering the convex surface the lens would be able to resist the blow to which it is ordinarily subjected; namely, one applied to its center. Long, on the other hand, discovered that to resist the strains applied laterally to the skirts of the element it was desirable to over-temper the concave surface. There is nothing in the art before this Court teaching or leading one to infer that an element such as shown by Long is better with the over-temper on the concave surface. If the Wells patent teaches anything it teaches the contrary; and we submit that this discovery constituted an invention which was patentable to Long and which is properly expressed in the claim.

Respectfully submitted,

Vernon M. Dorsey,
Attorney and Counsel for Appellant.

APPENDIX

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IN THE

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA

No. 7884.

SOCIETE ANONYME, ETC., *Appellant*

v.

CONWAY P. COE, *Appellee*

Appeal from the District Court of the United States for the District of Columbia.

APPENDIX TO BRIEF FOR APPELLANT.

I.

PLEADINGS, DOCKET ENTRIES AND OTHER PAPERS DESIGNATED BY APPELLANT.

1 Endorsed: Filed Aug 31 1939 Charles E. Stewart, Clerk.

In the District Court of the United States for the District of Columbia

Civil Action No. 3978

Societe Anonyme Des Manufactures Des Glaces & Produits Chimiques de Saint Gobain, Chauny & Cirey 1 bis Place des Saussaies (8eArrt.) Paris, France, *Plaintiff*,

vs.

Conway P. Coe, Commissioner of Patents, *Defendant*.

Complaint

(To enforce issuance of Letters Patent)

1. This action arises under Section 4915 of the Revised Statutes of the United States (35 U. S. C., Title 35, Sec. 63), as hereinafter fully appears. Defendant as Commissioner of Patents has an official residence in the District of Columbia and is in the jurisdiction of this Court.

2. Bernard Long, a citizen of the Republic of France, residing at Paris, France, being the inventor of certain new and useful improvements in "Light Transmitting Concrete Structure", and being entitled to file an application for Letters Patent thereon, and having complied with all the requirements of the Statutes in such cases made and provided and with the rules of the United States Patent Office, duly filed on April 25, 1935, as Serial Number 18,092, an application for Letters Patent for the said invention.

3. That by an assignment duly recorded in the Patent Office on the 25th day of April, 1935, in Liber Y-162, Page 696, said Long assigned all his rights in and to the said application to the plaintiff.

2 4. That in said application a certain invention patentable to the plaintiff was set forth in the following claims:

"5. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the concave surfaces being more rapidly cooled than the convex surface.

6. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the cooling on the convex surface being due to exposure to air and the cooling on the concave surface being due to air currents blown against the same.

7. A method of hardening a cup-shaped glass element havin ga convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces by air currents of different intensities directed against said surfaces to cool the concave surface more rapidly than the convex surface."

and a patent upon the said invention as so expressed was duly demanded by said application, the application was duly prosecuted in accordance with the Statutes of the United States and the rules of the Patent Office in such cases made and provided, but said claims were finally rejected by the Primary Examiner, and his action affirmed by the Board of Appeals on or about March 14, 1939.

5. No appeal has been taken to the United States Court of Customs and Patent Appeals from any action in the Patent Office in said application.

WHEREFORE, plaintiff demands judgment that it is entitled, according to law, to receive a patent for his invention as specified in his claims or for any part
3 thereof, as the facts in the case may appear.

Societe Anonyme des Manufactures
des Glaces & Produits Chimiques
de Saint Gobain, Chauny & Cirey
By its attorneys

DORSEY, COLE & GARNER.

VERNON M. DORSEY
1346 F Street, N. W.,
Washington, D. C.
Solicitor.

* * * * * * * * * *

4 W. W. COCHRAN, U. S. Patent Office,
Attorney for Defendant.

Answer to the Complaint.

To the Honorable the Justices of the District Court of the United States for the District of Columbia.

1. He admits the allegation of jurisdiction under Section 4915 R. S. (U. S. C., title 35, sec. 63.), and the allegation of defendant's official residence in the District of Columbia, his legal residence being in the State of Maryland.

2. He admits that Bernard Long, claiming to be the inventor of certain alleged new and useful improvements in Light-Transmitting Concrete Structure, filed in the Patent Office on April 25, 1935, an application for patent thereon, to which application Serial No. 18,092 was given. He admits for the purpose of this action that the application was duly filed and was in compliance with the requirements of law and the rules of the Patent Office.

3. He admits the allegation of assignment of said application to plaintiff.

5 4. He admits that said application as amended includes claims 5, 6 and 7, as set out in paragraph 4,

He admits that said application was duly prosecuted and that said claims were finally rejected by the primary examiner. He admits that the action of the primary examiner was affirmed by the Board of Appeals in a decision rendered March 14, 1939. He denies that plaintiff is entitled to the issuance of a patent on said application containing any of the claims set out in paragraph 4 as said claims are deemed to be unpatentable in view of the patent to Wells et al., No. 1,454,200, Granted May 8, 1923, and for the reasons given in the statement of the examiner in answer to the appeal and the decision of the Board of Appeals, copies of which will be furnished at the trial. Profert of a copy of said patent to Wells et al. is hereby made.

5. He admits that no appeal has been taken from the decision of the Board of Appeals to the United States Court of Customs and Patent Appeals.

W. W. COCHRAN
Attorney for Defendant.

September 29, 1939.

I hereby certify that a copy of this Answer was mailed to the attorney for plaintiff on September 29, 1939.

W. W. COCHRAN
Attorney for Defendant.

* * * * * * * * * *

6 *Statement of Evidence*

On the trial of this cause before Mr. Justice Jennings Bailey, on Wednesday, January 8, 1941, the proceedings were stenographically reported. The plaintiff produced one witness, whose testimony in question and answer form is filed herewith. The plaintiff also introduced in evidence a certified copy of the file wrapper and contents in the application of Bernard Long, Serial No. 18,092, filed April 25, 1935, for "Light Transmitting Concrete Structure", together with a copy of the U. S. patent to Wells et al, No. 1,454,200, upon which the claims in issue were refused by the Commissioner of Patents, which are attached hereto:

Plaintiff's Exhibits

1. Certified copy of the file wrapper and contents in the application of Bernard Long, Serial No. 18,092, filed April 25, 1935.

2. U. S. Patent to Wells et al, No. 1,454,200.

* * * * * * * * * *

7 Washington, D. C.,
Wednesday, January 8, 1941.

The above entitled case came on for hearing at 11:45 a.m. before Mr. Justice Bailey.

Appearances:

On behalf of the plaintiff: Vernon M. Dorsey.
On behalf of the defendant W. W. Cochran.

Proceedings

The Court: Are counsel ready to proceed in this case?

Mr. Dorsey: Yes, your Honor. Your Honor has before you two cases, civil actions Nos. 3977 and 3978. I withdraw No. 3977, so you only have one case before your Honor.

The Court: That will be dismissed, then?

Mr. Dorsey: Yes, sir.

8 *Opening Statement on Behalf of Plaintiff.*

Mr. Dorsey: Long, the applicant, filed in 1933 an application directed to the disclosure of a concrete wall structure or a roof structure, containing glass elements. For your convenience, your Honor, I have a copy of the structure which I will present.

The case which I have withdrawn, is directed to a combination of a glass structure with that glass element. The case I am maintaining is a case having claims directed to the process of hardening that glass element so that it is resistant to the structural strain that exists in a concrete structure such as there shown.

Your Honor will note the cup-shaped glass elements retained in the concrete slab. The specification states that such elements, unless properly covered, are subject to breakage due to the strain set up by the slab, and points out that the breakage can be overcome by properly shaping the elements and by properly hardening the elements.

Hardening, your Honor, is used in this specification, which is a very early one, in the sense of tempering. It consists in a rapid chilling of a glass heated so that the surface in that glass is suddenly chilled, while the interior is still hot. The result is that, when properly done and the strains are properly applied, you have an article that is much stronger than otherwise would be present.

9 Our claims, I think, are very limited, than we should otherwise have made them, but your Honor cannot cure that. I am here to present the claims as made, and for that purpose I would like to present one witness, your Honor.

Opening Statement on Behalf of Defendant.

Mr. Cochran: May it please the Court, the case which has been retained is for a process of hardening a glass element. That process comprises of blowing a current of air against one side of the element to harden that side more than the other side or quicker than the other side is hardened. The particular article which is being hardened, of course, is not a part of the process. The Patent Office has stated that it relies upon the Wells patent, which shows hardening a glass article by a direct current of air against one side, to harden that side. The position of the Patent Office is that the method disclosed in the Wells patent is exactly the same method that the plaintiff has, and that the difference which may exist in the articles is no part of the method.

Mr. Dorsey: Your Honor would like to know the claim that we are considering.

(Mr. Dorsey here handed up to the Court a paper.)

Mr. Dorsey: I offer for your Honor's consideration the Wells patent cited, and I offer as an exhibit the file wrapper.

The Court: I have the Wells patent here.

Mr. Dorsey: Very well, your Honor. This would
10 be much easier for you, because this is simply a
single page.

(The copy of the Wells and Tillyer Patent was thereupon received in evidence and marked "Plaintiff's Exhibit No. 1")

Mr. Dorsey: I offer the file wrapper, the certified file wrapper of the application in suit.

The Court: Very well.

(The file wrapper referred to was thereupon received in evidence and marked "Plaintiff's Exhibit No. 2.")

Mr. Dorsey: I want to state your Honor, in order that there may be no misapprehension, that while this suit is nominally brought by the Societe Anonyme of France, the applicant, the real party in interest is the Corning Glass Works, and our witness will be from the Corning Glass Works. I thought that your Honor should know that fact. Mr. Phillips please take the stand.

Whereupon: Charles John Phillips was called as a witness for and on behalf of the plaintiff, and having been first duly sworn, was examined and testified as follows.

Direct Examination.

By Mr. Dorsey:

Q. Please state your name, age, residence and occupation? A. Charles John Phillips; age 32; address 3 Sims Avenue, Corning, New York. At the present time I am sales manager with the insulation division of the Corning Glass Works.

11 Q. What qualifications have you to testify as an
expert in this suit? A. For six years I acted as a
physicist in the physical laboratory of the Corning Glass

Works and for 5 years of that period I was employed in work on the hardening and tempering of glass articles of all kinds. My training has been as a physicist.

Q. Have you read the application of Long here before the Court and do you understand the same? A. I have read it and I do understand it.

Q. Please explain what is meant by hardening as used in that specification? A. The term "hardening" refers to a particular kind of heat treatment of glass. The term "tempering" is now more widely and more accurately used to express the same sense as the term "hardening" previously expressed. Specifically a glass article, when it is hardened or tempered, is first formed and after forming it is reheated to a temperature above its softening point. That temperature would usually be in the neighborhood of 700 to 800 degrees centigrade. Then, while it is still hot it is very suddenly cooled. This sudden cooling, after the glass is finally returned to room temperature, usually leaves the surface layers in a compression with tension sufficient to balance that compression located in the interior of the glass, and this system of compression and tension is an integral part of that glazed body as long as it exists as a single piece. The term "hardening" I believe originally arose because
of the stresses on the surface, give the surface
12 a resistance greater than the ordinary to surface
scratching or to tensile stresses of any kind that may
be imposed on the surface.

Q. Is the ordinary tumbler we see generally tempered? A. By no means. More or less the reverse treatment has been applied to a tumbler. In the process of manufacture the ordinary tumbler stresses are interposed, which may be detrimental, because they are uncontrolled stresses, so the glass manufacturer takes the tumbler soon after it has been formed and passes it through an annealing oven whose purpose is to remove all of the stresses, both tension and compression.

Q. Have you read and do you understand the patent to Wells and Tillyer, No. 1,454,200, sent up by the Commissioner? A. I have read it and I understand it.

Q. Please explain what you understand to be the disclosure of that patent. Have you got a copy of it? A. I haven't it here with me.

Q. Take this one? A. My understanding of the Wells and Tillyer patent is, first, that it applies to lenses such as are used for goggles, and I mentioned that because these goggles or lenses are very thin and they have only a little or slight curvature therefore they are essentially a flat body. Wells and Tillyer point that it is advantageous to heat these lenses and then to suddenly chill one surface,
that being the convex surface, allowing the concave
13 part of the lens to cool normally as today in the air.
They point out that this strengthens the convex portion of the lens, because it has a greater resistance to the abuse it might receive in service, but they also point out that it throws the opposite face, the concave face, into a tension, and this to my mind is a very important part of their patent, and should be remembered just as being as important as the fact that they have suddenly cooled the convex side and presumably thrown it into compression.

Q. Are you through? A. Yes, sir.

Q. What purpose do you understand from the Wells and Tillyer patent the inventors had in mind in tempering the convex surface? A. We know, of course, that the convex surface of the goggle lens is the surface that is worn outwardly and is the surface that will receive abuse from contact with all kinds of objects. Consequently, they desire to strengthen that surface so that it would resist blows or abuse of any kind. That, as I understand it, is the whole purpose of this patent.

Q. Have you read and do you understand the specification forming a part of the application of Long, Serial No. 18092, here before the Court? A. Yes. I have read it and I understand it.

13 Q. State what you understand to be the disclosure
of that patent and the advantages present from its
14 structure? A. The bodies embodied in the Long disclosure are cup-shaped. In tempering or hardening

a cup-shaped article it is necessary to heat the whole article to above its softening point, and then to cool it, and in cooling a cup-shaped object—in this case the concave surface of the glass—is very, very difficult to chill in the same way as one can chill the outer convex surface, and there are several reasons for that. The article is very hot as it is about to be chilled, and there is an interchange of radiation between the inner surface of this cup-shaped article. That radiation is very important and tends to keep the inner surfaces hot, decreasing the effectiveness of the cooling. If the outer surface alone was cooled and the inner were allowed to cool at the normal, very much slower rate, that article would end up with compression stresses only on the outer convex surfaces, and it is extremely likely that the inner surfaces would be in tension. That tension might be high enough to cause the article to break spontaneously. In any case it would be likely that it would be high enough so that in service the additional stresses, due to the expansion and contraction of the mortar or cement, added to this residual internal tension, would cause the object to break.

To overcome this natural process, Long has deliberately cooled the inner surfaces much more rapidly than they would cool naturally, and even more rapidly than he cools the external surfaces. By doing that he throws both the outside and the inside surfaces of this article into compression, which is desirable because it does greatly increase the ability of this element to withstand the stresses it may obtain in service.

That is my understanding of the Long application.

Q. You have read the decision of the Board affirming the Examiner's objection in the Long case, have you not? A. I have.

Q. I call your attention to the following found therein:

> "It seems to us that the method of differentially cooling is substantially the same in the two cases, and that it is a mere matter of choice as to which surface is to be cooled the more rapidly."

That is referring to the Wells and the Long application. What have you to say as to the question of choice there? A. It is certainly a matter of choice in that either surface can be cooled more rapidly than the other at will, but it is certainly not a matter of choice when definite types of surface are encountered. There is to my knowledge nothing in the prior art which would indicate which method of the two should be used under certain circumstances. In other words, it may be desirable in some cases to have the external convex surface in compression and the internal concave surface in tension, but that is very seldom the case. It is usually desirable to have both surfaces in compression, and one can't do that by making a choice between either cooling one or the other more rapidly.

Q. Do you know anything of the art prior to 1933 touching
the desirability of more rapidly cooling, or cooling
16 the interior surface of the cup-shaped article? A. I
do not know of anything prior to that.

Mr. Dorsey: That is all, your Honor.

Cross Examination.

By Mr. Cochran:

Q. Do you regard an article made according to the method of the Long application to be superior to the one which is perhaps cooled on the opposite side more readily or more quickly? A. I do.

Q. What is the advantage of that? A. The advantage is this. The glass technologist now believes that glass never breaks except in tension. I must illustrate that statement or it will mean nothing. If you take a small tube of glass and press it in compression it will ultimately break, but the glass technologist believes that that break is not due to compression but is due to the tension that is set up and that has proven to be true. Therefore, to maintain the strength in a glass article as it is formed or to increase that strength, it is necessary to keep tension away from the outer faces of the article. If there is any tension that may be put in the article in the course of hardening, it should be restricted to the internal layers of the glass where it can do no harm, and both surfaces should be put into compression.

Q. You have examined the specification of the Long application? A. I have.

17 Q. Is there anything said in there by which you can point out here why a concave article is better by reason of it being hardened on the inside instead of the outside? Is there any reason given there? A. To my knowledge no reason which we would accept as an explanation today, with our greater knowledge of the art.

Q. It is your view, though, that the article is superior by reason of its particular treatment? A. Yes.

Q. The air blast on the inside being greater than on the outside? A. Yes.

Q. Coming to the Wells patent, it is true, is it not, that Wells does apply a cooling medium to one side which will cool that side and harden it more quickly than the other side is cooled and hardened? A. Yes, that is true.

Q. Then he does it by an air blast on the particular side which he wishes to cool faster? A. Yes, sir.

Q. However, it is your view that that selection of the side to which the cooling is applied would not be suitable in this other article? A. It is really more than a matter of suitability. It would not be suitable, yes, that is true, but it would also depend on the extent of the cooling on this one side that he is cooling, because if he just allows the concave side to be cooled normally he is very, very likely to
18 end up with tension. In fact he states in his own
case that he does wind up with tension, which, to my mind, is making a virtue of the necessity which arose at that time.

Q. There is a difference of cooling applied to the opposite faces of the article in the two cases; is that not true? A. That is certainly true.

By the Court:

Q. Is there anything in the Long application, or rather the Long claim, showing any difference in the rapidity of the cooling than in the Wells patent? A. Not as specified in scientific terms of cubic feet of air per minute, but there is an obvious realization that the side surfaces must not be allowed to cool at its normal rate, but that must be definitely accelerated, and I do not believe that acceleration would ever have been deemed advisable or necessary unless there was some understanding in Long's mind as to what would happen if he did not use this differential.

Q. It is said here:

"A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the desired shape and while heated to the proper hardening temperature by simultaneously cooling both outer and inner surfaces, the cooling on the convex surface being due to exposure to air and the cooling on the concave surface being due to the air current."

19 A. Yes.

Q. Claim No. 2 of the Wells patent reads:

"The process of producing a tempered lens consisting in uniformly heating the lens blank, suddenly cooling one surface thereof, and allowing the opposite surface to cool naturally."

A. There is a very definite difference—

Q. (Interposing) What is the difference? A. The difference is this your Honor. Let me see if I can express it in a better way. Suppose an article becomes cup-shaped so that the heat on the inner face is trapped, it then becomes difficult for those inner faces to cool even at their natural rate. In other words, a flat disc of glass weighing one pound and heated to a certain temperature will cool more rapidly than a cup-shaped piece of glass of the same weight at the same temperature. So that, if I cool one surface only, cool the outer surface and allow the inner surface to cool as it will, if I cool that outer surface rapidly enough I may actually form an article which would blow away spontaneously; whereas, if I do the reverse, I accomplish just what I am aiming for. I put both surfaces in the compression and have an article from three to seven times stronger than an article made in this way.

Q. Compare the figures III and VII of the Wells patent with the Long application? A. Yes.

Q. Are they similar in shape? A. They are similar in shape, and here it is a matter of which surface is to receive the greater amount of cooling.

The Court: I understand that. I did not mean to butt in on this matter Mr. Cochran.

Mr. Cochran: I had finished, your Honor. It seems to me that the witness has admitted that the process is about the same.

The Witness: I would like, if I may—

The Court: (Interposing) Very well.

The Witness: (Continuing)—to attempt to give you an example. An ordinary milk bottle is a hollow object with an outside and an inside surface. More than that, the bottom of it is usually dome-shaped, very similar to figure 2 or figure 3 of the Long application. We find that if we take that bottle, heat it up above its softening point, and dip it either into some liquid that will cool it rapidly or put it in an air strain, the dome-shaped bottom traps enough heat which is in the bottom portion of the bottle, although it does not seem logical that it will—trap that heat and keep that from cooling, so that when we temper this bottle all portions of the bottle are properly tempered except that this dome-shaped bottom will not be, and the moment that is scratched by any harder object, such as a diamond, there would be a mark left. It is a matter of the symmetry of the bottle. If this bottom, instead of being dome-shaped, had been bellied out, then there would be no difficulty in tempering this bottle, with the desirable results.

So that what happens, to my mind here, is that the Wells and Tillyer cool and temper the face which they, by the use of the goggle lens, considered wise the face that

21 should be strengthened, allowing the other face to do pretty much what it wanted to do. Apparently the degree of air tempering was rather small. The amount of tension they noticed in that inner concave face was not very great. If they had carried this compression a little further for a desirable result, they would have had none whatever, because the lens would be blown up spontaneously whereas to my mind Long here has realized the difference in cooling between the inner and outer facing, the fact that the inner face must be cooled to a certain extent to permit tension, and does therefore deliberately take into account what happens in this tempering process to obtain an article which will actually stand up in service.

By Mr. Cochran:

Q. When you are speaking of the milk bottle case, you say that due to the doming of the bottom, that part would not cool as quickly. Did you have any difficulty in coming to the conclusion that it should be cooled by blowing air to it? A. Yes. Because, if you take the obvious step and direct a current of air against that, the results are not what you would anticipate. You do overcome the tension on the outer surface of the glass, but unfortunately you have a weakening effect at the corners and you change the compression on the inner face, so that as a matter of fact the obvious step won't work, and what you have to do is not to chill the bottle in this direction at all, but turn it upside down and chill the inside surfaces, which are entirely analogous to the inside surfaces of the cup-shaped element—in other words, reverse the process. The symmetry and shape of these articles are the essence of the case. If we
22 are talking about flat discs of glass, I do not think
there would be anything here for us to talk about.

By Mr. Dorsey:

Q. I imagine your last statements are based on your extensive experiments, are they not? A. Yes, sir; they are

Mr. Dorsey: I think your Honor that closes the case. I have put in the file wrapper.

Mr. Cochran: I offer in evidence the file wrapper, which is perhaps in part a duplication.

Mr. Dorsey: I think I have got everything in. I have the Wells patent and the file wrapper. I have the whole file wrapper.

Mr. Cochran: Then it will not be necessary for me to do that.

The Court: Very well.

(Whereupon at 12:25 p. m. the case was concluded.)

24 Civil Action No. 3978

Societe Anonyme

vs.

Coe.

I think that the plaintiffs' claims are clearly unpatentable in view of the Well's patent.

The complaint should be dismissed.

BAILEY
J

* * * * * * * * * *

25 *Findings of Fact.*

1. These are civil actions brought under the provisions of Section 4915 R. S. (U. S. C., title 35, sec. 63) in which plaintiff, the assignee of patent applications Nos. 700,279 and 18,092, of Bernard Long, sought to have the Court authorize the issuance of a patent containing claim 8 of application No. 700,279, and a patent containing claims 5, 6 and 7 of application No. 18,092.

2. These actions were consolidated for the purposes of trial, by order of the Court on October 31, 1940.

3. At the trial of these cases on January 8, 1941, plaintiff withdrew Civil Action No. 3977 and requested a dismissal thereof.

4. The claims of the application of Bernard Long, No. 18,092, which is the basis of Court Action No. 3978, are for methods of hardening a cup-shaped glass element having a rounded edge. In one method, the glass element while in

heated condition is subjected to a current of air di-
26 rected against its concave surface, while the convex
surface is allowed to cool naturally. In another method, the glass element while in heated condition is subjected to currents of air directed against both surfaces, the current directed against the concave surface being of the greater intensity.

5. Each of the British patents to Hyatt, No. 2788 of 1873, and No. 783 of 1874, discloses a cup-shaped glass element having a convex outer surface, a concave inner surface, and a rounded surface joining said convex and concave surfaces.

6. The patent to Wells and Tillyer, No. 1,454,200, of May 8, 1923, discloses a method of forming a hardened lens of concave-convex form. According to the method disclosed, the lens while in heated condition is subjected to a current of air directed against its convex surface.

7. In the methods claimed by plaintiff and in the method disclosed by Wells and Tillyer, the result is the same, namely, the more rapid cooling and hardening of that surface of the glass element against which the current or stronger current of air is directed.

8. So far as the methods claimed in plaintiff's applications are concerned, it is immaterial whether the rim of the cup-shaped glass element is rounded, as claimed and as shown in the British patents, or is square, as shown in the patent to Wells and Tillyer.

9. In view of the Wells and Tillyer patent it was not invention to harden a glass element of the form claimed, by
directing a current of air against the concave side
27 thereof, nor was it invention to harden a glass ele-
ment of the form claimed by directing a current of air against the convex surface thereof and a current of greater intensity against the concave surface thereof.

Conclusions of Law.

1. The complaint in Civil Action No. 3977 should be dismissed in view of plaintiff's withdrawal of this action at the trial.

2. Claims 5, 6 and 7 of the application of Bernard Long, No. 18,092, involved in Civil Action No. 3978, are unpatentable over the prior art.

3. Plaintiff is not entitled to receive a patent containing any of claims 5, 6 and 7 of the application of Bernard Long No. 18,092.

4. The complaint in Civil Action No. 3978 should be dismissed.

JENNINGS BAILEY
Justice.

* * * * * * * * * *

28 *Judgment.*

This cause having come on to be heard and having been tried in open court and argued by counsel for the respective parties upon the pleadings and proofs adduced and submitted to the Court,

It is ADJUDGED this 14th day of February, 1941, that the complaint in this case be, and the same hereby is dismissed with costs against the plaintiff.

JENNINGS BAILEY
Justice.

Approved as to Form:

VERNON M. DORSEY
Attorney for Plaintiff.

* * * * * * * * * *

29 *Notice of Appeal*

Notice is hereby given this 13th day of March, 1941, that Societe Anonyme des Manufactures des Glaces and Produits Chimiques de Saint Gobain, Chauny & Cirey, hereby appeals to the United States Court of Appeals for the District of Columbia from the judgment of this Court entered on the 14th day of February, 1941 in favor of Conway P. Coe, Commissioner of Patents against said Societe Anonyme des Manufactures des Glaces and Produits Chimiques de Saint Gobain, Chauny & Cirey.

VERNON M. DORSEY
Attorney for Plaintiff.

Memorandum

MARCH 13-1941.

Cost Bond ($250.00) on Appeal—filed.

* * * * * * * * * *

30 *Statement of Points to be Relied on Appeal*

The appellant intends to rely on the following points in his appeal to the United States Court of Appeals for the District of Columbia in the above entitled cause:

1. The Court erred in dismissing the Bill of Complaint on the grounds and for the reasons stated in the conclusions of law appurtenant to the above entitled cause.
2. The Court erred in not granting the plaintiff the relief sought by the Bill of Complaint.
3. The Court erred in failing to recognize and apply settled principles of patent law relating to the patentability of method claims of the Long application, Serial No. 18,092 involved herein.
4. The Court erred in holding the Long claims unpatentable over the prior art and particularly over the Wells et al. patent No. 1,454,200.

Respectfully,

SOCIETE ANONYME DES MANUFACTURES
DES GLACES AND PRODUITS CHIMIQUES
DE SAINT GOBAIN, CHAUNY & CIREY,

VERNON M. DORSEY, *Attorney*,
1346 F St., N. W.,
Washington, D. C.

March 29, 1941.

Copy delivered to
W. W. COCHRAN, ESQ.,
Attorney for defendant.

* * * * * * * * * *

31

Stipulation of Record

It is hereby stipulated by and between counsel for the respective parties in this cause that the Clerk of the United States District Court for the District of Columbila prepare a transcript of record on appeal to the United States Court of Appeals for the District of Columbia in the above entitled cause to include the following:

1. Bill of Complaint.

2. Answer.

3. Statement of Evidence.

4. Memorandum opinion of Justice Bailey, filed January 21, 1941.

5. Findings of fact and conclusions of law.

6. Final decree, dismissing the bill of complaint herein, notation of appeal and filing of bond for costs on appeal.

7. Statement by appellant of the points on which he intends to rely on the appeal.

8. Stipulation of the designation of the parts of the record, proceedings and evidence to be included in the record on appeal.

VERNON M. DORSEY, *Attorney for Plaintiff*,
1346 F Street, N. W.,
Washington, D. C.

W. W. COCHRAN, *Attorney for Defendant*,
U. S. Patent Office,
Washington, D. C.

March 29, 1941.

* * * * * * * * * *

23 *Order to Omit Duplication of Exhibits.*

It is Ordered this 10th day of April, 1941, with the consent of the parties hereto, that plaintiff's original exhibits 1 and 2 be used for the transcript of record to be certified to the United States Court of Appeals for the District of Columbia.

JAS W. MORRIS
Justice

I consent:

VERNON M. DORSEY,
Attorney for Plaintiff.

W. W. COCHRAN,
Attorney for Defendant.

* * * * * * * * * *

May 8, 1923. 1,454,200

J. C. WELLS ET AL

ANTAEUS GLASS

Filed May 13, 1922

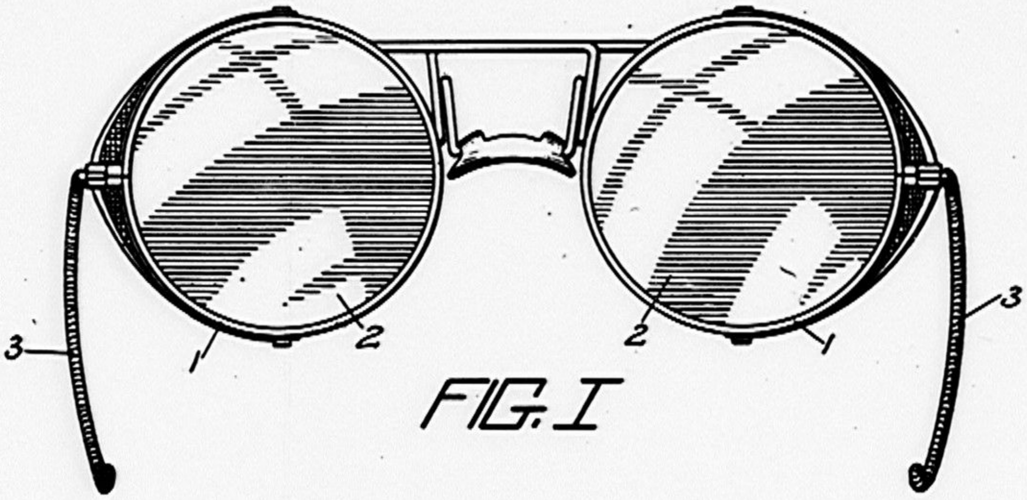

FIG. I

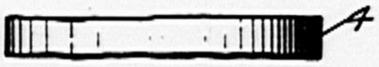

FIG. II

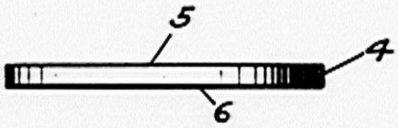

FIG. III

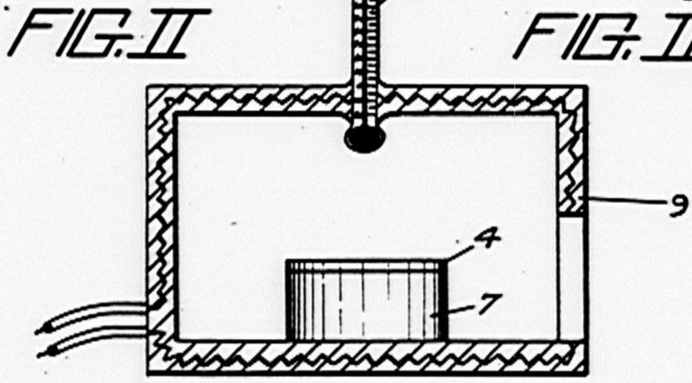

FIG. IV

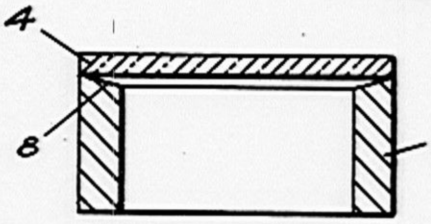

FIG. V

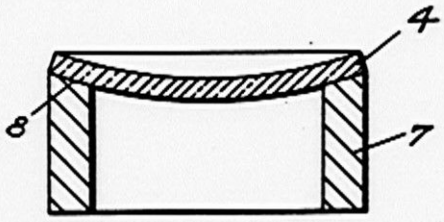

FIG. VI

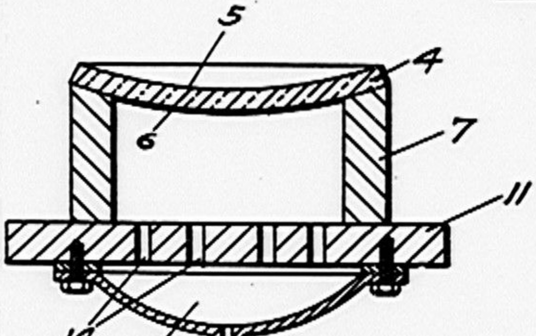

FIG. VII

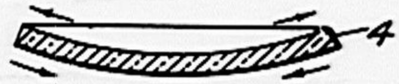

FIG. VIII

INVENTOR
J.C. WELLS
E.D. TILLYER
BY
H. H. Styll & H.K. Parsons
ATTORNEYS

Patented May 8, 1923. **1,454,200**

UNITED STATES PATENT OFFICE.

JOEL C. WELLS AND EDGAR D. TILLYER, OF SOUTHBRIDGE, MASSACHUSETTS; SAID TILLYER ASSIGNOR TO SAID WELLS.

ANTÆUS GLASS.

Application filed May 13, 1922. Serial No. 560,614.

To all whom it may concern:

Be it known that we, Joel C. Wells and Edgar D. Tillyer, citizens of the United States, residing at Southbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in New Antæus Glass, of which the following is a specification.

This invention relates to a new and useful process in the forming of ophthalmic lenses and more particularly to a process whereby lenses of this character will be produced which will withstand comparatively heavy blows or pressure upon the convex surface of the lens so that they will be especially valuable for use in various types of goggles and the like.

The main object of our invention is the process of forming a lens particularly adapted for use in goggles and the like where it is sometimes necessary to have the convex surface of the lens withstand a comparatively heavy blow with the assurance of the fact that the lens will not be shattered or broken over the contact of the blow and thus protect the eyes of the wearer.

A further object of our invention is the process of forming a hardened lens which consists in heating a lens blank to produce a convex surface and then suddenly cooling this convex surface causing the same to contract in the cooling of the concave surface slowly which will tend to exert a pull on the hardened convex surface producing a compression in the convex surface and a tension in the concave surface.

A further object of the invention is the provision of a lens of the above character which can be produced at a comparatively low cost and which at the same time will provide an effective protection for the eyes of the wearer.

With the above and other objects in view the invention consists in the novel features of construction, the combination and arrangement of parts hereinafter more fully set forth, pointed out in the claims and shown in the accompanying drawings, in which—

Figure I is a front elevation of a pair of goggles including our improved lens.

Figure II is a side elevation of a non-finished lens blank.

Figure III is a side elevation of a finished lens blank.

Figure IV is a transverse section of a heating furnace for producing the concave on the lens.

Figure V is a vertical section illustrating the lens upon the supporting ring prior to heating.

Figure VI is a transverse section showing the lens in a reformed condition.

Figure VII is a longitudinal section thru a cooling device showing the lens in position for cooling the convex surface, and

Figure VIII is a longitudinal sectional view of a finished lens constructed in accordance with our improved process.

Referring to the drawings which we have used for illustrating the use of our improved lens and the manner of carrying out the process, the numeral 1 indicates the lens frames of a pair of goggles in which the lenses 2 are mounted. The goggles are provided with the usual temples 3 for supporting the same upon the face of the wearer, the lenses illustrated herein being of our improved type.

The process of forming our improved lens consists in taking a rough lens blank 4 which is shown in Figure II for grinding and polishing the opposed surfaces of the lenses until they are ground down to the proper thickness as shown in Figure III. It is preferred to have the surfaces of the lens polished prior to hardening as will be set forth hereafter as the hardening of the lens will not destroy polished surfaces.

In Figure III the lens is shown with two polished surfaces 5 and 6 and after a lens has been polished to the required condition it is placed upon a supporting ring 7 having an inwardly inclined bevel portion 8 as illustrated in Figure V.

The ring 7 is preferably arranged within a heating furnace 9 and the lens 4 arranged within the furnace and mounted upon the upper edge of the ring. The furnace 9 is heated to the required temperature which will soften the lens and cause the lower surface thereof to drop downwardly as illustrated in Figure VI, the face of the lens adjacent the edge resting upon the inclined surface 8 to thus produce a true arc on the convex surface of the lens. In order to regulate the required amount of temperature necessary to cause the lens to drop as shown in Figure VI a thermometer 10 is arranged within the furnace with the upper end projecting thru the roof of the furnace so that

26

the temperature may be readily regulated by the operator.

After the lens has been heated and formed to the proper shape as illustrated in Figure VI it is quickly transferred to a cooling device which includes the supporting plate 11 having a chamber 12 arranged beneath the plate in the form of a concave pocket and communicating with the chamber is an inlet tube 13 which communicates with the interior of the chamber 12 to provide a suitable air pressure which is distributed over the convex surface 6 of the lens by means of a plurality of perforations 14 formed in the plate 11 whereby the convex surface of the lens will be quickly cooled which will cause the same to contract, set and harden while the upper or concave surface of the lens is in a softened state.

Attention is called to the fact that when the soft surface on the concave side of the lens begins to cool it will slowly tend to produce a pulling on the hardened convex surface of the lens producing a compression in the convex surface 6 of the lens and a tension in the concave surface 5 of the lens.

In Figure VIII the direction of the arrows on the convex surface of the lens illustrates the direction in which the contraction takes place while the arrows on the concave surface indicates the expansion of the softened selfside of the lens prior to cooling.

From the above it will be apparent that after a lens has been put thru the above process, the convex surface of the lens will be in a sufficiently heated condition to withstand comparatively severe blows on the surface of the lens without the lens being shattered or broken over the contact of the blow.

In the art of manufacturing glass it is a well known fact that glass under compression is much stronger than glass under tension and it is, therefore, one of the principal objects of our process to produce compression upon the convex surface of the lens with a tension in the concave surface as it is the convex surface of the lens which must withstand any blows.

It will also be apparent that our improved process is comparatively inexpensive to carry out and at the same time will produce a lens which will be extremely effective for the use to which it is to be applied.

We claim:

1. The process of producing protection lenses consisting in heating the lens uniformly and subsequently cooling one face of the lens while the other is in a plastic condition.

2. The process of producing a tempered lens consisting in uniformly heating the lens blank, suddenly cooling one surface thereof, and allowing the opposite surface to cool naturally.

3. The process of producing a tempered lens consisting in finishing the surfaces of a glass blank, subjecting the parts to heat which will drop the finished blank to desired curve and suddenly chilling one face of the blank to produce a surface tension thereof.

4. As an article of manufacture a lens blank having opposite inherent stresses on the respective faces thereof.

5. The process of producing a curved protection lens consisting in surfacing the faces of the lens in flat form, subjecting the blanks after surfacing to sufficient heat to drop the lens to desired curve without impairment of the polished surfaces thereof, and suddenly chilling one face of the blank to produce a surface tension in the finished blank, increasing the resisting properties thereof.

6. The process of producing a shock resisting ophthalmic lens consisting in heating the lens to a plastic condition and causing one face of the lens to harden and set in advance of the other whereby the contraction of the later cooling surface will produce a compression as respects the first cooled surface, causing a surface tension effect therein.

JOEL C. WELLS.
EDGAR D. TILLYER.

41 This invention relates to a light-transmitting concrete structure and refers more particularly to a method of hardening a glass element which, when completed, is embedded in concrete and forms a part of a roofing or similar structure. This application is a division of my co-pending U. S. patent application, serial #700279, filed November 29, 1933.

Glass elements used for building purposes are usually embedded or set in a concrete masonry which may be reinforced by means of iron tie rods. The glass elements form, together with the reinforced or ordinary concrete, a unitary structure which may be used as a part of various buildings or constructions. Such glass elements are usually arch-shaped, since elements of that form withstand more successfully the mechanical forces exerted upon them by the adjacent parts of the structure.

It was found in a number of instances that these glass elements crack or chip off after having been used for a short time, and that usually the cracks occurred at the edges which are formed by two or more abutting surfaces of the arch-shaped glass elements. This is caused by the fact that the edges of such glass elements cannot withstand the shocks or other forms of pressure exerted upon the structure and that rapid fluctuations of temperature affect the edges and the protruding portions of the arch-shaped glass elements more strongly than other parts thereof.

The process of hardening the glass elements by rapidly and uniformly cooling the same, which process is usually applied in the course of their manufacture for the purpose of increasing their mechanical resistivity, has also the effect of increasing the inner forces developed within them.
The result of this process, is, therefore, that al-
42 though the main body of a glass article is sufficiently
hardened, its edges and projecting portions become quite fragile and can easily crack or break off under the influence of external forces.

An object of this invention is the provision of a glass element of a light-transmitting structure which will not comprise any portions that can break off easily.

Another object is the provision of a glass element having a shape which will prevent it from cracking even under strenuous conditions.

A further object is the provision of a method of cooling glass elements in the course of their manufacture, said method resulting in the production of glass articles having no fragile or breakable portions.

The above and other objects of this invention may be realized through the provision of a glass element having rounded convex or concave surfaces which are joined tangentially with each other, i. e., without forming any edges or ridges. The glass element made in accordance with the principles of this invention is of a varying thickness, said thickness changing slightly and gradually throughout the entire section thereof, or at least throughout a substantial part of the section.

A glass element of this type is able to withstand successfully the external forces exerted upon it by the adjacent portions of the concrete structure, if it is hardened immediately after solidification in a certain way which is best suitable for the particular shape of the glass element. Experience has shown that the usual method of hardening glass articles by rapidly and uniformly cooling the same is not entirely satisfactory if such method be applied to a glass
element of the proposed type. In accordance with
43 the present invention it is suggested, therefore, that
a glass element of the proposed type be hardened by the application of different rates of cooling to different surfaces thereof, namely, by cooling the inner surface of the glass element more rapidly than the outer surface. This may be accomplished by applying a current of air to the inner concave surface of the glass element, while the outer convex surface is cooled by a free exchange of heat with the atmosphere, or by the use of different air currents, one of which, namely, that which is applied to the inner concave surface, flows more rapidly and/or has a lower temperature than the air current applied to the outer convex surface of the glass element. The air currents may be created by

blowing or by suction and any means usually employed in the art may be used for that purpose.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawing showing preferred embodiments of the inventive idea.

In the drawing:

Figure 1 is a section through a structure consisting of a plurality of cup-shaped glass elements set in reinforced concrete.

Figure 2 is a section through a glass element carried by a bed of reinforced concrete.

Figures 3 and 4 illustrate diagrammatically methods of cooling glass articles in accordance with the principles of this invention.

The structure illustrated in Figure 1 of the drawing comprises a plurality of cup-shaped glass elements 5 carried by a bed of reinforced concrete 6, such reinforcement be-
44 ing provided by the tie rods 7. Each one of the glass
elements 5 comprises an outer convex surface 8, an inner concave surface 9 and round edge surfaces 10 which connect the convex surface 8 with the concave surface 9 and form a continuation of these surfaces. Each one of the glass elements 5 is entirely round, so that it has no sharp edges and no projecting or protruding portions; its thickness varies gradually from a maximum at the middle of the slab to a minimum at the edges thereof.

Figure 2 shows a glass element 11 carried by a bed of concrete 12 which is reinforced by tie rods 13. The glass element 11 has a convex outer surface 14, a concave inner surface 15 and round edge surfaces 16. This glass element is also entirely round and has no projecting or protruding portions.

A preferred method of cooling the glass element 11 immediately after it has become solid is illustrated in Figure 3 of the drawings. The inner concave surface 15 of the glass element 11 is cooled by an air current produced by a blowing device 17, comprising the usual nozzle 18 and a pipe 19. The outer convex surface 14 of the glass element 11 is turned upwards and is cooled merely by being exposed to the atmospheric air.

Figure 4 illustrates a method of cooling the glass element 5 shown in Figure 1. A suction device 20 which comprises a round head portion 21 provided with openings 22 and connected with a pipe 23 is inserted into the hollow interior of the glass element 5, and is placed adjacent to the inner concave surface 9 of the glass element. The suction produced by the device 20 will suffice to create a current of air passing along the surface 9 of the glass element 5. The outer surface 8 of the glass element 5 may be cooled by exposing it to atmospheric air. However, if a quick cooling is desired, a blowing device 24 may be arranged adjacent to the surface 8 of the glass element 5. In that case, the current of air produced by suction must be substantially stronger than the current of air produced by blowing.

The glass elements produced in accordance with the principles of this invention have a much greater resistivity against mechanical forces and against variations in temperature than the articles known in the prior art, the improved qualities of these articles being due to the shape thereof as well as to the particular method of cooling used in the course of manufacture of such articles.

* * * * * * * * * *

Insert the following:

—5. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the concave surfaces being more rapidly cooled than the convex surface.

6. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface

rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the cooling on the convex surface being due to exposure to air and the cooling on the concave surface being due to air currents blown against the same.

61 7. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces by air currents of different intensities directed against said surfaces to cool the concave surface more rapidly than the convex surface.

* * * * * * * * * *

66 Mailed May 9-1938

Div. 15—4897 Paper No. 12
ZSF/FD

Department of Commerce
U. S. Patent Office
Washington, D. C.

May 9, 1938

Before the Board of Appeals

In re application of Bernard Long
Serial No. 18,092 Filed Apr. 25, 1935
For: Light-Transmitting Concrete Structure

Examiner's Statement

This is an appeal from the final rejection of claims 5 to 7. No claims have been allowed.

The finally rejected claims read as follows:

5. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the concave surfaces being more rapidly cooled than the convex surface.

6. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the cooling on the convex surface being due to exposure to air and the cooling on the concave surface being due to air currents blown against the same.

7. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces by air currents of different intensities directed against said surfaces to cool the concave surface more rapidly than the convex surface.

67 The claims are drawn to a method of hardening a cup-shaped glass element to increase the mechanical resistance of said elements. The process, briefly, comprises differentially cooling the article to be hardened so that the concave surface is cooled more rapidly than the convex surface. This may be done by either directing a blast of air against the concave surface while permitting the convex surface to cool by exposure only or by directing a blast of air against both surfaces, the blast directed against the concave surface being of greater intensity than that directed against the convex surface.

Reference relied upon is

Wells et al 1,454,200 May 8, 1923

The patent to Wells et al discloses the method of hardening a cup-shaped glass article by differentially cooling the surfaces of the same. Wells et al chill the convex surface of a glass lens and permit the concave surface to cool at a slower rate to produce a compression in the convex surface and a tension on the concave surface. It is Wells' desire to produce a glass article having a hardened shock resistant outer surface. This he does by inducing shrinkage stress in the convex side, thus placing that side under compression. As stated by Wells, this glass surface under compression has greater hardness and shock resistance than one under tension or under no stress.

The claims have been rejected as unpatentable over the patent to Wells. It is submitted that Wells et al disclose the process of hardening glass as recited by the claims. That applicant cools the concave surface at a greater rate than the convex surface does not patentably distinguish his method from that of Wells. The method is the same,
namely, differentially cooling opposite faces of a glass
68 article to harden it. Though the method may result
in an article differing from that of Wells et al, it is
made by the method of Wells. The method of hardening glass by cooling opposite surfaces of the glass at differing rates has long been known, and having determined which surface of an object it is desired to place under compression so as to harden same, one skilled in the art would know that this surface should be cooled more rapidly than the opposite surface. No invention is seen in applying this well-known method to applicant's article. The common method of bringing about such cooling is to blow a blast of air on the surface to be chilled. Since it is the differential cooling which is effective to harden the glass, it is not seen that increasing the rate of cooling on the convex side by drawing air thereover over that which would result from cooling on exposure still results in an article differing materially from one

formed by the method of Wells; i.e., permitting one surface to cool by exposure alone. It is thus seen that though the article may differ from that of Wells, the method does not.

Respectfully,

B. HENKIN
Examiner, Div. 15.

* * * * * * * * * *

87 U. S. Patent Office Board of Appeals Mar 14 1939
Mailed

Appeal No. 26,327 Paper No. 23
Hearing: OB
February 20, 1939

In the United States Patent Office

Before the Board of Appeals

Ex parte Bernard Long

Application for Patent filed April 25, 1935, Serial No. 18,092. Light-Transmitting Concrete Structure.

Messrs. Richards & Geier and Messrs. Dorsey, Cole & Garner for applicant.

This is an appeal from the action of the Primary Examiner finally rejecting claims 5, 6 and 7.

Claim 5 is illustrative and reads as follows:

5. A method of hardening a cup-shaped glass element having a convex outer surface, a concave inner surface rounded surfaces joining said convex and concave surfaces, comprising hardening the said element while having the described shape and while heated to a proper hardening temperature by simultaneously cooling both its outer and inner surfaces, the concave surfaces being more rapidly cooled than the convex surface.

The reference relied upon is:

Wells et al 1,454,200 May 8, 1923

The claims are drawn to a method of hardening a cup-shaped glass element. The heated article is simultaneously
cooled on both sides, but at a more rapid rate on its
88 concave side than on its convex side. This may be
accomplished by applying a current of air to the concave surface while the outer convex surface is cooled by a free exchange of heat with the atmosphere (Fig. 3), or by applying currents of air to both sides as shown in Fig. 4. In the latter case, however, the current applied to the inner side flows more rapidly or is cooler than the current applied to the convex side.

The patent to Wells et al. discloses a method of differentially cooling the opposite sides of pieces of glass which are concave on one side and convex on the other. The heated glass, as shown in Fig. VII of the patent, has a cooling current applied to its convex side while its concave side is exposed to the atmosphere. Both sides are simultaneously cooled as in applicant's Fig. 3, but the convex side is cooled at the faster rate.

It seems to us the method of differentially cooling is substantially the same in the two cases, and that it is a mere matter of choice as to which surface is to be cooled the more rapidly. The claims are deemed unpatentable over the reference.

The decision of the examiner is affirmed.

BOARD OF APPEALS
EUGENE LANDERS
Examiner-in-Chief
F. P. EDINBURG
Examiner-in-Chief
E. T. MORGAN,
Examiner-in-Chief

March 14, 1939

Messrs. Dorsey, Cole & Garner
1346 F Street, N. W.
Washington, D. C.

* * * * * * * * * *

37

18092 DIV. 15

#14

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11

Fig. 1.

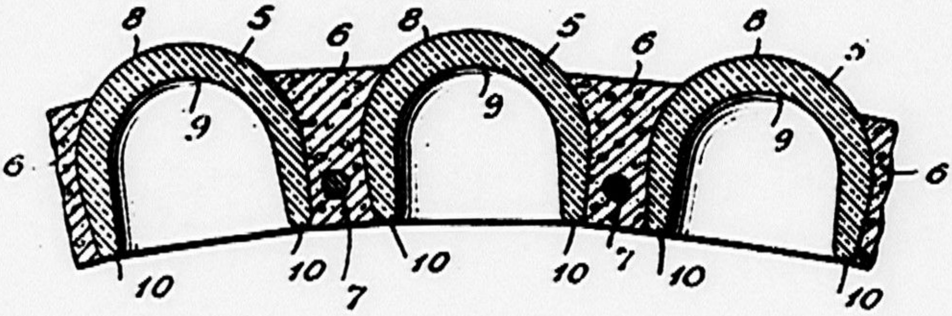


Fig. 2.

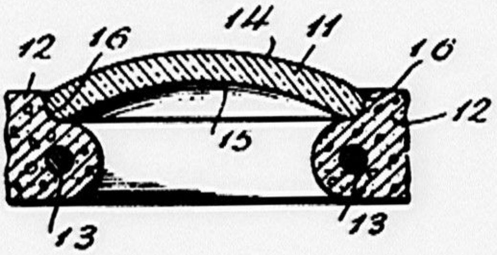


Fig. 3.

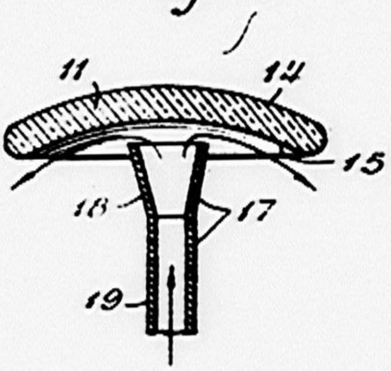
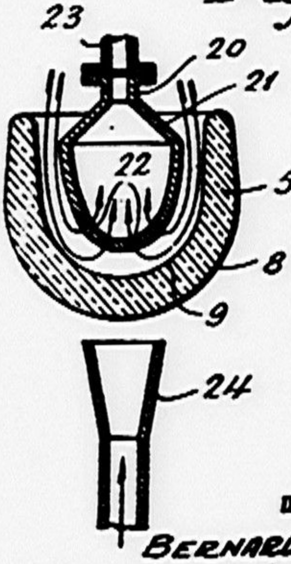


Fig. 4.



INVENTOR.
BERNARD LONG

BY Richards & Geier
ATTORNEYS.

UNITED STA
COURT OF APPEAL
DISTRICT OF CO

FILED SEP 2 - 19

Joseph W. St

In the United States Court of Appeals for the District of Columbia

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Appeal No. 7884

Societe Anonyme des Manufactures de Glaces et Produits Chimiques de Saint-Gobain, Chauny & Cirey, appellant

v.

Conway P. Coe, Commissioner of Patents, appellee

APPEAL FROM THE JUDGMENT OF THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA

BRIEF FOR APPELLEE

W. W. Cochran,
Solicitor, U. S. Patent Office,
Attorney for Appellee.

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In the United States Court of Appeals for the District of Columbia

No. 7884

SOCIETE ANONYME DES MANUFACTURES DE GLACES ET PRODUITS CHIMIQUES DE SAINT-GOBAIN, CHAUNY & CIREY, APPELLANT

v.

CONWAY P. COE, COMMISSIONER OF PATENTS, APPELLEE

APPEAL FROM THE JUDGMENT OF THE DISTRICT COURT OF THE UNITED STATES FOR THE DISTRICT OF COLUMBIA

BRIEF FOR THE COMMISSIONER OF PATENTS

This is an appeal from the judgment (App. 19) [1] of the District Court dismissing the Complaint (App. 2) brought by appellant under Section 4915 R. S., U. S. C. title 35, sec. 63, to have the Court authorize appellee, the Commissioner of Patents, to issue a patent on application No. 18,092, filed in the Patent Office on April 25, 1935, by Bernard Long. The application is assigned to appellant. Claims 5, 6, and 7 (App. 3) of the application are involved in the appeal.

THE SUBJECT MATTER OF THE CLAIMS ON APPEAL

The three claims on appeal relate to a method of hardening cup-shaped glass elements by cooling the concave surface more rapidly than the convex surface. Claim 5 does not recite the means by which the cooling is done. Claim 6 recites that the convex surface is cooled by exposure to air while the concave surface is cooled by air currents blown against it. Claim 7 recites that both surfaces are cooled by air currents directed against them, the currents being of different intensities to cool the concave surface more rapidly than the convex surface.

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[1] The numbers in parentheses in this brief refer to the pages of Appellant's Appendix.

SUMMARY OF ARGUMENT

I. The claims on appeal are method claims, not article claims. Any superiority which the article produced by appellant may have over the prior art has no bearing on the question of patentability of the method claims.

II. The method claims on appeal are unpatentable over the Wells et al. patent. The latter discloses a method of hardening a cup-shaped glass article in which the convex side is cooled more rapidly than the concave side, by means of a current of air blown against the convex side. Appellant uses the same method of cooling but applies it to the concave side of the article. This is a difference in articles, not in method.

ARGUMENT

I

The question before the Court

It is important to observe at the outset that the claims on appeal (App. 3) are for a method of hardening an article and not for the article itself. Therefore in order to justify allowance of the claims it would be necessary to find that the method itself involves invention over the prior art, irrespective of the merits of the article made by the method.

In the specification of appellant's application (App. 27) and in the testimony offered in the Court below, it is indicated that a concavo-convex glass element used for building purposes has advantages if it is hardened on its concave side.

While this may be true, the question whether such an article would be patentable is not before the Court. The question is whether appellant's particular method of hardening required the exercise of invention. *Paramount Publix Corporation* v. *American Tri-Ergon Corporation,* 1935 C. D. 777, 294 U. S. 464; *In re Williams,* 87 F. (2d) 499, 24 C. C. P. A. 861.

II

The claims are unpatentable over the Wells et al. patent

The Wells et al. patent, No. 1,454,200, May 8, 1923 (App. 24–26), discloses a process for making a concavo-convex lens. The object of the patentees was to produce a lens having a hardened outer convex surface, so that it would withstand blows. To accomplish this they heated a flat disk of glass 4 in a furnace 9, resting the disk on a ring 7. When the disk was sufficiently softened by the heat it assumed the concavo-convex form shown in Figs. VI and VII. They then placed the supporting ring 7 and disk 4 on a cooling device 11 having means for blowing a current of air against the convex side of the disk. The convex side of the disk was thus cooled more rapidly and hardened to a greater extent than the concave side of the disk since the latter was exposed only to still air.

In appellant's method the air is blown against the concave instead of the convex side of the glass element. This alleged difference between the methods is merely a matter of selection of the side of the article, to which the worker desires to impart the hardened surface.

This selection would seem to be clearly within the skill of the art, and not to require any uncommon talent. *Textile Machine Works* v. *Louis Hirsch Textile Machine Works, Inc.,* 302 U. S. 490, 498–9; *Essex Razor Blade Corp.* v. *Gillette Safety Razor Co.,* 299 U. S. 94.

The patentees and the appellant both desired to produce a cup-shaped glass article having one side hardened more than the other. Both adopted the same method, the application of a current of air to the side of the article which they desired to harden. The fact that the patentees desired to harden the convex side and appellant desired to harden the other side is a difference between the articles and not a difference in method.

It seems clear that the patentees Wells et al., after obtaining their patent on the method disclosed therein would not have been entitled to a second patent for the same method applied to the other side of the glass disk, for the simple reason that the second patent would not disclose a method inventively different from the method disclosed in the first patent. Appellant is obviously no more entitled to a patent than Wells et al. would have been entitled to a second patent.

As pointed out above, claim 5 (App. 3) is a broad claim which is not limited to any cooling means. Claim 6 (App. 3) recites that the concave side of the article is cooled by a current of air. Claim 7 (App. 3) is more specific in reciting the use of two currents of air of different intensity, the current of greater intensity being directed against the concave side of the article.

The result obtained by the use of two currents of air as recited in claim 7 is the same as when only one current of air is used, i. e. the two sides of the article are cooled at different rates. It would seem that if the cooling of one side of the article by exposure to still air were found to be too slow, it would be obvious to use a current of air to cool it more rapidly and to increase the current of air against the other side sufficiently to maintain the desired differential. Thus the modification recited in claim 7 appears to be only an obvious extension of the method of Wells et al. *Smith* v. *Nichols,* 21 Wallace, 112, 119.

CONCLUSION

It is submitted that the lower Court was right in finding that the claims on appeal involve nothing amounting to invention over the disclosure made in the Wells et al. patent, and it is submitted that its judgment should be affirmed.

W. W. COCHRAN,
Solicitor, U. S. Patent Office,
Attorney for Appellee.

AUGUST 1941.

U. S. GOVERNMENT PRINTING OFFICE: 1941